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NOTES ON MEXICAN MELANOPLI.

(Orthoptera; Acrididæ.)

BY MORGAN HEBARD.

In preparing a Revision of the Melanopli of North America, north of Mexico, it has been found necessary to consider all of the Mexican material at hand. We have before us the greater portion of the important material, including almost all the types, described by Scudder in his Revision of the Orthopteran Group Melanopli and by Bruner in the *Biologia Centrali-Americana*; the papers here referred to being the most important single contributions to the knowledge of this group for Mexico. The Philadelphia collections contain other types and important series previously recorded from Mexico. In addition, we have fortunately been able to assemble nearly all the recently collected Mexican Melanopli and take the present opportunity to record the same.

It is clear that great numbers of species of the Melanopli, found in the southern portions of the United States, will be found in northern Mexico, but as yet have not been taken in that country. In fact, the Melanopli assembled show that generally casual collecting has been done, a very few localities fairly well investigated, while vast areas still remain virtually unknown for this group. The last condition is particularly true for all the regions of Mexico adjacent to the United States. We would hesitate to report on collections so evidently incomplete were it not necessary to point out the considerable synonymy proven by the series at hand.

Five genera and ten species are shown to be synonymic in the present paper. A single new species is described. Four hundred and thirty-nine specimens, representing fourteen genera and thirty-six species, are here considered.

The superficial character of Scudder's Revision is best shown by the array of errors in his treatment of the species of the United States. The errors applicable to Mexican material, for which he erected two generic and six specific synonyms, did not come as a surprise after the other portions of his work had been studied.¹

¹ The new genera and species, described by Scudder in his Revision (December 28, 1897), all actually date from the key which was separately printed in advance, in the *Proceedings of the American Philosophical Society*, XXXVI, pp. 5 to 35, (April 5, 1897).

We wish to express our cordial thanks to the curators of the collections of the Museum of Comparative Zoölogy, United States National Museum, American Museum of Natural History, and Field Museum of Natural History for the loan of material. We are particularly indebted to Dr. Samuel Henshaw, of the Museum of Comparative Zoölogy, for permitting us to have for comparison and study the types from the Scudder Collection, without which we would have been unable to undertake the present work.

***Netrosoma fusiforme* Scudder.**

1897. *Netrosoma fusiformis* Scudder, Proc. U. S. Nat. Mus., XX, p. 17, Pl. II, fig. 2. [Monclova (*nec* Montelovez²), Coahuila (*nec* Chihuahua³), Mexico.]

1908. *Netrosoma fusiforme* Bruner, Biol. Cent.-Amer., Orth., II, p. 300. (Same material.)

1910. *N[etrosoma] uniformis* Kirby, Syn. Cat. Orth., III, p. 486. (*Lapsus calami*.)

Monclova, Coahuila, XI, 23, 1909, (F. C. Bishopp), 1 ♂, 2 ♀, [U. S. N. M.].

These strikingly beautiful examples are in no way different from paratypes now before us.

***Netrosoma nigropleura* Scudder.**

1897. *Netrosoma nigropleura* Scudder, Proc. U. S. Nat. Mus., XX, p. 18, Pl. II, fig. 3. [Lerdo, Durango, Mexico.]

1908. *Netrosoma nigropleurum* Bruner, Biol. Cent.-Amer., Orth., II, p. 300. (Same material.)

Jaral, Coahuila, XI, 1 to 3, 1909, (J. Friesser), 1 ♀, [Field Mus. Nat. Hist.].

The size contrast between the sexes of the present species is even greater than in *N. fusiforme*. The female is also very different from the male type, in the Hebard Collection, in being almost solid rood's brown in general coloration, the two darker bands of the caudal femora being only very faintly indicated dorsad. As in the male, the caudal tibiae are pompeian red, this weaker externally proximad. The measurements of this female are as follows; length of body 20.8, length of pronotum 4.7, greatest (caudal) width of pronotum 6.1, length of caudal femur 11.6, width of caudal femur 3.5 mm. In the male type the length of the caudal femur is 8.8, its width 2.8 mm.

***Dichroplus notatus* Bruner.**

1908. *Dichroplus notatus* Bruner, Biol. Cent.-Amer., Orth., II, p. 301. [♂, ♀; Amula, Guerrero, Mexico, 6000 feet.]

Cuernavaca, Morelos, 1905, (W. L. Tower), 1 ♀, [Tower Cln.].

This specimen is slightly larger than a cotypic female in the Hebard Collection, being 19.7 mm. in length, and is more richly

² This error appears repeatedly in Scudder's revision, due to the incorrect entry of Palmer's assorting number 1221 in the book used by Scudder.

³ Scudder in some places gives Chihuahua incorrectly as the State, in other places he is more nearly correct, giving "Cohahuila."

colored. In both specimens the greater portion of the caudal femora is deep bluish glaucous.

PEDIES Saussure.

1861. *Pedies* Saussure, Rev. et Mag. de Zool., (2), XIII, p. 157.

1893. *Paradichroplus* Brunner,⁴ Révis. Syst. Orth., Ann. Mus. Genova, XXXIII, p. 145.

Careful study of the literature and study of the specimens discussed below, proves to our full satisfaction the above synonymy. Saussure's description, though very brief, gives nearly all the features of importance. The efforts of Scudder and Bruner to locate *Pedies virescens*, the genotype by monotypy, have been decidedly incorrect, their supposition being that the position of the species was near *Dactylotum*. At the time *Paradichroplus* was described Brunner ignored the genus *Pedies*.

We would note that, from material before us, three species, *mexicanus* (Brunner), *variabilis* (Brunner) and *andeanus* (Caudell), in addition to the genotype, are referable to *Pedies*; but that *nigrigena* Rehn and *brunneri*, *fusiformis* and *bipunctatus* all of Giglio-Tos, assigned originally to *Paradichroplus*, can not properly be placed in the present genus.

Striking features in the genus *Pedies*, as given by Saussure, are: the strongly declivent and convex face; the sub-bicarinat frontal costa; the conoid-arcuate apex of the head; the pronotum with strong percurrent median carina cut weakly by the principal transverse sulcus, with distinct percurrent lateral carinæ and with caudal margin distinctly emarginate, and male genitalia of the characteristic type found in *Dichroplus* and allied genera.⁵

Pedies mexicanus (Brunner).

1861. *Platyphyma mexicanum* Brunner, Verh. k.-k. Zool.-bot. Gesellsch. Wien, 1861, p. 224. [♀, Mount Orizaba, Mexico, "au pied de la neige."]

Mount Orizaba, 11500 feet, III, 1893, (western slope), 2♂, 2 juv. ♂, [Hebard Cln.].

An additional dried alcoholic female from the United States National Museum, without exact data, is at hand.

The prosternal spine in this insect is broadly truncate, cuneiform.

⁴ This genus was described without type designation; the type by first subsequent fixation is *Platyphyma mexicanus* Brunner, selected by Kirby, Syn. Cat. Orth., III, p. 492, (1910).

⁵ Certain of these features are not indicated in the aberrant *P. variabilis* (Brunner), see p. 254.

***Pedies variabilis* (Scudder).**

1897. *Melanoplus variabilis* Scudder, Proc. U. S. Nat. Mus., XX, p. 319, Pl. XXI, fig. 8. [♂, ♀; Mexico City and Querétaro, Mexico].
 Ocotlan, Jalisco, 5000 feet, VIII, 29 to IX, 1, 1906, (P. P. Calvert), 1 juv. ♀, [A. N. S. P.].
 Yurecuaro, Michoacan, 5000 feet, IX, 4, 1906, (P. P. Calvert), 1♂, [A. N. S. P.].
 Tlalpam, Distrito Federal, XI, 1887, (L. Bruner), 21♂, 6♀, [Hebard Cln.].

This insect, the single type of which is before us, is a distinctly aberrant member of the present genus. Compared with *P. mexicanus* it is found to differ in the slender, conical prosternal spine, the weakly obtuse-angulate caudal margin of the pronotum, the distinctly less retreating face, lanceolate and overlapping tegmina and distinctive male genitalia. The general structure, however, particularly of the head and pronotum, shows definitely a derivation from the stock of *P. virescens* and *mexicanus* rather than from any of the types of the genus *Melanoplus*.⁶

***Cephalotettix pilosus* (Stål).**

1878. *P(tatyphyma) pilosus* Stål, Bih. till k. Svensk. Vet.-Akad., Handl., V, No. 9, p. 10. [♂, ♀; Mexico].
 1897. *Cephalotettix parvulus* Scudder, Proc. U. S. Nat. Mus., XX, p. 31, Pl. III, fig. 1. [♂; Atoyac and Orizaba, Vera Cruz, Mexico].
 1897. *Rhabdotettix pilosus* Scudder, *ibid.*, p. 35. [Generic assignment].
 1897. *Melanoplus geniculatus* Scudder, *ibid.*, p. 239, Pl. XVI, fig. 3.⁷ [♂, ♀; Mexico.]

Careful comparison of Scudder's type of *parvulus* and his type and allotype of *geniculatus* with Stål's description of *pilosus* proves the synonymy given above, Stål's material apparently differing only in being somewhat larger, (length 16 mm.). That size variation occurs in the species is shown by the two males before us, (length 12.7 and 14 mm.).

The specimens described as *geniculatus* have lost their natural brilliant coloration from immersion in alcohol. This explains the differences in Scudder's color descriptions of *parvulus* and *geniculatus*. Haste and carelessness fully explain the glaring errors made by that author. Unfortunately, his "Revision of the Melanopli" shows so frequent a succession of such serious errors that these would seem inexplicable, were the author's superficial method of procedure not known.

The black genicular areas of the caudal femora and bases of the

⁶ The peculiar percurrent lateral carinae of the pronotum and character of the surface of the lateral lobes are exactly as in *P. mexicanus*.

⁷ This figure is incorrect, the subgenital plate and cerci of the specimen figured being exactly as given on plate III, figure 1.

caudal tibiae are a striking and distinctive feature in the present insect.⁸

PHÆDROTETTIX Scudder.

1897. *Phædrotettix* Scudder, Proc. U. S. Nat. Mus., XX, p. 22.

1897. *Rhabdotettix* Scudder, *ibid.*, p. 32.

1897. *Cyclocercus* Scudder, *ibid.*, p. 36.

The genotype of *Phædrotettix*, *angustipennis*, is inseparable generically from the species of *Rhabdotettix*, of which *palmeri* is the genotype. It is true that *palmeri* and *dumicola*⁹ agree closely in distinctive features of male genitalic development, while in both the tegmina are ovate. In the other species of *Phædrotettix* the tegmina are linear, but this difference alone is utterly insufficient to warrant generic separation. The male genitalic development shows widely different features in a number of the species, this being much the greatest in *valgus*, but in our opinion generic separation is in no case warranted.

A careful comparison of the genotype, *Phædrotettix angustipennis*, with *accola*, genotype of *Cyclocercus*, shows also that the latter genus must fall in the present synonymy. The pronotum of *accola* shows a very slightly heavier median carina than is found in the other species of *Phædrotettix*. This feature is of no generic value, nor are the male genitalic features given by Scudder. In fact, were the latter given generic significance it would be necessary to separate *gracilis* and *bistrigata* as one, *litus* as another, *palmeri* and *dumicola* as another and *valga* as still another genus.

Key to Males of the Species of *Phædrotettix*.¹⁰

A. Tegmina very slender, not elongate ovate or ovate.

B. Dorsum of pronotum pale, immaculate. Distal portion of abdomen not enlarged. (Fercula absent. Cerci moderately elongate, slender, tapering to blunt apex. Supra-anal plate elongate shield-shaped; truncate, obtuse-angulate distad. Subgenital plate simple, small, scoop-shaped.)

accola (Scudder).

⁸ Scudder failed to note that the bases of the caudal tibiae were black in the type of his *parvulus*.

⁹ The types, now before us, of Scudder's *Pezotettix dumicolus* and *Rhabdotettix concinnus* show the certain synonymy of these names, the former of which has priority. At the time *concinnus* was described, Scudder referred *dumicola* to the genus *Melanoplus*.

¹⁰ This key is based on examination of the type of each species considered and additional males of all except *bistrigata* and *litus*, which species are known from the unique type and allotype.

- BB. Dorsum of pronotum dark. Distal portion of abdomen enlarged.
- C. Distal portion of abdomen slightly enlarged. (Fercula present; small, broad, blunt, trigonal. Cerci moderately elongate, slender, tapering to acute apex. Supra-anal plate trigono-shield-shaped, with a minute dorsal tubercle proximad on each side. Subgenital plate simple, small, scoop-shaped).....*gracilis* (Bruner).
- CC. Distal portion of abdomen decidedly enlarged.
- D. Fercula absent. Cerci decidedly elongate, very slender in distal portion but with apex blunt. Supra-anal plate short, trigono-shield-shaped. Subgenital plate simple, small, scoop-shaped. Pronotum with decided dorso-lateral pale lines.....*bistrigata* (Scudder).
- DD. Fercula represented by weak and broad convexities of the segment. Cerci and subgenital plate specialized. Supra-anal plate elongate, shield-shaped. Pronotum without decided dorso-lateral pale lines.
- E. Supra-anal plate elongate shield-shaped, truncate obtuse-angulate distad, with a minute dorsal tubercle proximad on each side. Cerci moderately elongate, distal portion moderately broad, tapering sharply at extremity to acute ventral apex. Subgenital plate small, produced in a small median, marginal, blunt tubercle.....*angustipennis* Scudder.
- EE. Supra-anal plate elongate shield-shaped, lateral margins cingulate, straight and convergent proximad, convex and convergent distad. Cerci heavy, elongate, with an acute proximal projection on ventral margin,¹¹ distal portion moderately broad, curving ventrad, with margins at extremity weakly convex to the acute apex. Subgenital plate large, the free margin above the plane of the supra-anal plate, with a large, very blunt, median, marginal tubercle feebly suggested.....*valga* (Scudder).
- AA. Tegmina longer, elongate ovate. Supra-anal plate simple, broadly shield-shaped. Cerci broad.
- B. Cerci broad, not bent inward, apex acute and situated dorsad, distal margin strongly oblique. Fercula minute, bluntly obtuse-angulate projections. General coloration green, locally washed with red, color pattern not complex. (Subgenital plate small, simple, with distal portion the more strongly rounded but not tuberculate).....*litus* new species.
- BB. Cerci bent inward at near the middle, apex evenly rounded. Fercula very broad and extremely narrow plates with distal margin straight. General coloration brown to green, not washed with red, color pattern complex. (Pallium conical, produced.)

¹¹ This frequently projects downward between the supra-anal and subgenital plates and is in this position concealed.

- C. Cerci broad throughout, distal portion narrower but not slender. Pallium moderately produced. Subgenital plate with a weakly suggested, blunt tubercle meso-distad at the free margin. Size averaging smaller and color usually darker.....*palmeri* (Scudder).
- CC. Cerci broader, distal portion not as much narrower. Pallium greatly produced. Subgenital plate with distal portion evenly rounded. Size averaging larger and coloration usually paler.....*dumicola* (Scudder).

The females are less easily separated. Those of *accola* are distinctive in the pale dorsal surface of the pronotum; of *angustipennis* by the small size, immaculate dorsum of pronotum and somewhat maculate caudal femora; those of *valga* from the female allotype of *bistrigata* only by their smaller size and less robust form. The females of *litus*, *palmeri* and *dumicola* have the tegmina much broader than in any of the other species. The female of *litus* is readily separated by the distinctive coloration, which is similar to that of the male. Those of *palmeri* and *dumicola* are separable only by the usually different size and coloration as found in the males.¹²

The species *accola*, *palmeri* and *dumicola* are found within the United States and will be comprehensively treated in another study; of these *palmeri* alone is known from Mexico, in which country the type series was taken.

***Phædotettix gracilis* (Bruner).**

1908. *Cyclocercus gracilis* Bruner, Biol. Cent.-Amer., Orth., II, p. 307. [♂, Tampico, Tamaulipas, Mexico.]

Tamos, Tamaulipas, XII, 7, 1909, (F. C. Bishopp), 1♂, [Hebard Cln.].

Pueblo Viejo, Vera Cruz, XII, 8, 1909, (F. C. Bishopp), 1♂, [U. S. N. M.].

The present species shows nearest relationship to *P. bistrigata*. The males differ in the smaller size, lack of very decided dorso-lateral cephalic and pronotal pale lines, only slightly enlarged apex of abdomen, presence of small, bluntly triangular furcula and less elongate but even more slender cerci. The general coloration would appear to differ only in the decided dorso-lateral cephalic and pronotal pale lines found in the male type of *bistrigata*; which specimen is, however, in a poor state of color preservation, having been dried after immersion in alcohol.

The male from Tamos shows individual variation in having the dark dorsal and dorso-lateral surfaces of the head and pronotum solid, the ventral portion of the pronotal lateral lobes buffy white

¹² The female of *gracilis* is unknown.

and the furcula very slightly more produced with apices directed latero-caudad.

***Phædrotettix angustipennis* Scudder.**

1897. *Phædrotettix angustipennis* Scudder, (in part), Proc. U. S. Nat. Mus., XX, p. 22, Pl. II, fig. 7. [♂, ♀: Mount Alvarez, San Luis Potosi, Mexico; Camacho, Zacatecas (*nec* Comancho, Durango) Mexico.]

The type series is before us. The species has never been taken north of Mexico, the Corpus Christi Bay, Texas, material originally included being referable to *P. accola*.

The much reduced tegmina are frequently absent, on one or both sides, as shown by the series before us. The caudal femora of this species and of *accola* differ from those of *gracilis*, *bistrigata* and *valga* in being not solidly colored, showing two broad, but normally very weak, darker suffusions dorsad.

***Phædrotettix valga* (Scudder).**

1897. *Cyclocercus accola* Scudder, (in part), Proc. U. S. Nat. Mus., XX, p. 38. [♀, Lerdo, Durango, Mexico.]

1897. *Cyclocercus valga* Scudder, *ibid.*, p. 39, Pl. III, fig. 6. [♂, Sierra Nola, Tamaulipas, Mexico.]

Victoria, Tamaulipas, I, 14 and 15, 1903, (S. N. Rhoads), 2♂, 2♀,¹³ [A. N. S. P.]; XII, 10, 1909, (F. C. Bishopp), 2♂, [U. S. N. M.].

A large series of well preserved material of *P. accola* from near the type locality, now at hand, enables us to straighten out the past confusion. All of the material, described by Scudder from Corpus Christi Bay, Texas, as *Phædrotettix angustipennis* and *Cyclocercus accola*, is dried alcoholic and in very poor condition.

Rehn's misidentification was due to Caudell's mistakes in comparison. Scudder's figures for the two species are excellent.

***Phædrotettix litus* new species.**

This species is distinctive in its striking green coloration washed with red. The eyes are appreciably more protuberant than in any

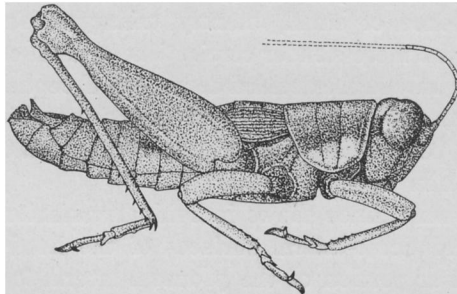


Fig. 1.—*Phædrotettix litus* new species. Lateral view of male. *Type*. (× 3.)

¹³ Incorrectly recorded by Rehn as *Phædrotettix angustipennis*, in 1904; following Caudell, who compared the material with cotypes of that species.

other species of the genus, while the male cerci are distinctive in form. The male supra-anal and subgenital plates are much as in *P. bistrigata*. The tegmina are more elongate but nearly as broad as in *P. palmeri* and *P. dumicola*.

Type: ♂; Victoria, Tamaulipas, Mexico. (O. W. Barrett.) [Hebard Collection Type No. 436.]

Size and form medium for the group, much as in *bistrigata*. Surface generally smooth, supplied with microscopic hairs, these particularly numerous on the caudal tibiae. Head with interocular space very narrow, hardly more than half as wide as proximal antennal joint, narrow sulcus of vertex distinct, vertex not decidedly produced, declivent; fastigio-facial angle rounded, rectangulate; face distinctly and evenly retreating; frontal costa broadly sulcate, a little the widest between antennal sockets, lateral margins more acute there, below becoming less distinct and parallel; supplementary facial carinae distinct, diverging slightly ventrad. Eyes protuberant, their dorsal surfaces slightly above the plane of the occiput, eyes distinctly longer than genae. Antennae filiform, slightly over twice as long as pronotum.

Pronotum without lateral carinae; dorsum scarcely expanding caudad, medio-longitudinal carina subobsolete, transverse sulci weak, the two on the prozona weaker and broken mesad, surface microscopically roughened on prozona, minutely punctulate on metazona, caudal margin broadly and feebly concave; lateral lobes of pronotum with cephalic margin feebly concave dorsad, feebly convex ventrad, ventral angles rounded obtuse-angulate, the ventro-caudal angles of greater degree, caudal margin moderately oblique, faintly concave. Tegmina lateral, elongate ovate, nearly two and one-half times as long as broad; apex bluntly rounded, the convexity strongest ventro-caudad; veins distinct, mainly longitudinal. Prosternal process well developed, acute conical, not deflected caudad. Mesosternal space distinctly longer than wide. Metasternal lobes narrowly separated.

Furcula subobsolete, represented by minute, bluntly obtuse-angulate projections of the segment. Supra-anal plate very broadly shield-shaped, simple. Cerci rather broad, narrowing gradually in proximal half, then subequal in width to base of distal portion; dorsal margin evenly and weakly concave to acute

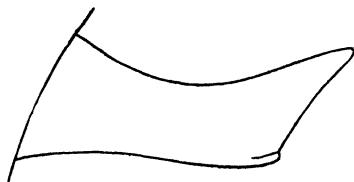


Fig. 2.—*Phædrotettix litus* new species. Lateral outline of cercus. *Type*. (Greatly enlarged.)

apex, ventral margin nearly straight, weakly undulating to sharply rounded, weakly obtuse-angulate disto-ventral angle, distal margin from this point feebly concave, oblique to the acute and produced disto-dorsal apex. Subgenital plate small, simple, scoop-shaped, the curvature of the surface sharp dorso-distad but with no indication of a tubercle. Limbs moderately stout. Caudal tibiæ hairy, with numerous (9 and 10) external and (10 and 10) internal spines.

Allotype; ♀; same data as type. [Hebard Collection.]

Size much larger than male, form distinctly more robust. Eyes less protuberant; vertex more blunt; interocular space wider, equalling

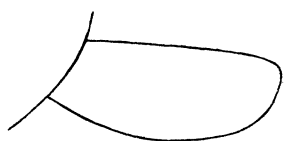


Fig. 3.—*Phædrolettix litus* new species. Outline of female tegmen. *Allotype*. (× 3.)

length of proximal antennal joint; frontal costa not sulcate but with minute pits above the antennal sockets, weakly and broadly sulcate below. Antennæ about twice as long as pronotum. Median carina of dorsum of pronotum stronger, weak but distinct on metazona, caudal

margin with broad concavity more distinct. Ovipositor valves moderately elongate; dorsal valves with dorso-external margins rather strongly toothed for the group and apical tooth almost straight, scarcely curved dorsad.

Measurements (in millimeters.)

	Length of body.	Length of pronotum.	Caudal width of pronotum.	Length of tegmen.	Width of tegmen.	Length of caudal femur.
♂. <i>Type</i>	17.	3.9	2.9	3.6	1.6	11.1
♀. <i>Allotype</i>	25.8	5.8	5.6	4.9	2.2	15.7

Coloration. Male. Dorsal surface of head, pronotum and abdomen, including tegmina, deep olive brown, shading to buffy olive laterad on abdomen. Face, cephalic and median limbs, ventral surface of sternum and lateral and ventral surfaces of abdomen buffy olive, becoming yellowish on sternum and proximo-ventral portion of abdomen. Antennæ buffy olive, shading to deep olive brown in distal half. Eyes prout's brown. Genæ buffy olive with a broad but weak brownish postocular band, weakly margined dorsad with buffy. Lateral lobes of pronotum in dorsal half claret brown, the band broadest caudad, its ventral margin concave; ventral half buffy, washed with claret brown. Caudal femora ecru olive washed with dragons blood red, this decided on the dorsal and ventral surfaces and proximad on the internal surfaces. Caudal tibiæ

lettuce green proximad, becoming oil green; spines black tipped; hairs white.

The female is almost identically colored, the dorsal surface only showing a stronger green suffusion, yellowish oil green on the metazona.

The species is known from a single pair.

***Sinaloa behrensii* Scudder.**

1897. *Sinaloa behrensii* Scudder, Proc. U. S. Nat. Mus., XX, p. 31, Pl. III, fig. 7. [♂, ♀; Sinaloa, Mexico.]

The type and allotype, belonging to the Museum of Comparative Zoölogy, are before us. The genus shows a general resemblance to *Phædrotettix*. The species resembles *P. gracilis* in general color pattern and *P. accola* in pronotal form and contour, but has the tegmina of the broader type found in *P. litus*, *palmeri* and *dumicola*. The elongate, slender, parallel male furcula, with a node on the dorsal surface of the subgenital plate on each side of these appendages are distinctive features in the present genus.

The specimens at hand are dried alcoholic but show the following features of coloration. Dorsal surface of head and pronotum rather pale, postocular dark stripe broad, less distinct but percurrent on the lateral lobes of the pronotum and continued on the tegmina, suffusing their ventral portions and with proximo-lateral dark areas on male abdomen which decrease in size caudad. Limbs pale, the genicular areas of the caudal femora suffused, dark brown.

***Sinaloa nitida* (Scudder).**

1897. *Melanoplus nitidus* Scudder, Proc. U. S. Nat. Mus., XX, p. 207, Pl. XIV, fig. 2. (In part.) [♂, Tepic, Mexico.]

The type and an additional topotypic male, when compared with the male type of *Sinaloa behrensii* now before us, show the unmistakable consanguinity of these very distinct and little known species. The extraordinary male genitalia are very similar in the two species, the only noteworthy difference being in the greater distal width of the cerci in the genotype, *behrensii*.

When compared, we find the male of *nitida* to be more robust in structure, with pronotum shorter, prozona more convex, with transverse sulci as decided but not cutting the weak median carina, which is weakly convex in longitudinal outline and prozona laterad weakly but distinctly and more evenly concave in outline. In the present insect the large shining black spot of the dorsal portion of the lateral lobes of the pronotum, margined by a narrow buffy convex line above and below, immaculate sides of the metazona and unicolorous tegmina are distinctive features of coloration.

It is further evident that Scudder's *Barytettix peninsulæ*,¹⁴ known from the unique female before us, is nearer *Sinaloa* than any other described genus and should be placed in this genus until the male sex is found to determine whether separation is necessary.

The female type of *peninsulæ* is more robust, with pronotum proportionately much shorter, than the female allotype of *behrensi*. It differs further in the broader and non-sulcate facial costa, decided transverse sulci of the dorsum of the pronotum which cut the weak median carina,¹⁵ strikingly bicolored tegmina and marking of the lateral lobes of the pronotum, which is of the same general type as found in *nitida* but by no means as solidly, sharply and strikingly defined as in that species.

PHAULOTETTIX Scudder.

1897. *Phaulotettix* Scudder, Proc. U. S. Nat. Mus., XX, p. 29.

1907. *Calotettix* Bruner, Biol. Cent.-Amer., Orth., II, p. 309.

Scudder's description is based on an immature specimen, as demonstrated by the individual now before us. Without examination of this type Bruner had every reason to believe that his material represented an undescribed genus.

The genotype, by monotypy, is *Phaulotettix compressus* Scudder.

Phaulotettix compressus Scudder.

1897. *Phaulotettix compressus* Scudder, Proc. U. S. Nat. Mus., XX, p. 30, Pl. II, fig. 11. [[juv.] ♂; Monclova (*nec* Montelovez), Coahuila, Mexico.]

1904. *Sinaloa brevispinis* Rehn, Proc. Acad. Nat. Sci. Phila., 1904, p. 535. [♂, ♀; Victoria, Tamaulipas, Mexico.]

1908. *Calotettix bicoloripes* Bruner, Biol. Cent.-Amer., Orth., II, p. 309. [♂, Victoria, Tamaulipas, Mexico.]

1908. *Calotettix flavopictus* Bruner, *ibid.*, p. 310. [♀, Monclova (*nec* Montelovez), Coahuila, Mexico.]

1908. *Calotettix brevispinis* Bruner, *ibid.*, p. 311. (Generic assignment.)

1908. *Calotettix obscurus* Bruner, *ibid.*, p. 311. [♂, Tampico, [Tamaulipas], Mexico.]

Scudder's type is an immature individual in one of the later instars. We are able to associate it with adults, beyond doubt as to species, from a large series of both adults and young now at hand from the eastern portion of the arid southwestern United States.

All of the material noted in the above synonymy is now before us. Rehn's synonymy is due to Scudder's description of *compressus* of a

¹⁴ 1897. *Barytettix peninsulæ* Scudder, Proc. U. S. Nat. Mus., XX, p. 28. [♀, Lower California.]

¹⁵ The weak transverse sulci of the pronotal disk cut the weak median carina in the male type of *behrensi*, but do not do so in the female allotype of that species, the association of these specimens as sexes of the same species being unquestionably correct. This is probably due to individual variation and shows this feature to be of no diagnostic value in that species.

supposedly adult and, in consequence, very distinctive insect. Bruner's synonymic genus and three synonymic specific names are entirely attributable to Scudder's error and the remarkable color variation found in the species.

The males are either brilliant green, marked with buff, or brown with a greenish suffusion, marked with buff; the females are either solid and almost immaculate brown or green, marked with buff. The caudal tibiae and tarsi of the males are entirely jasper red to scarlet red, or this color only in the distal third or two-fifths of the tibiae, the remaining proximal portion being light terre verte or porcelain blue. The females have the caudal tibiae and tarsi usually much less brilliantly colored, entirely reddish, or bluish, changing gradually through purplish to reddish distad. The dorso-lateral pale lines of the pronotum are striking only in the green condition of both sexes, these vary in width and are sometimes abruptly terminated at the principal sulcus. None of these types of coloration have any further significance than the adaptation of the individual to local environmental conditions.

- Monclova, Coahuila, IX, 20, (E. Palmer), 3 ♀¹⁶, topotypes, (2 brown; 1 green with broad percurrent pronotal stripes, caudal tibiae of all bluish to extremities), [M. C. Z.]; XI, 23, 1909, (F. C. Bishopp), 1 ♀, (green, with broken pronotal stripes not extending beyond principal sulcus, caudal tibiae briefly bluish proximad, remaining portions reddish), [U. S. N. M.].
 Victoria, Tamaulipas, XII, 10, 1909, (F. C. Bishopp), 1 ♀, (brown, caudal tibiae bluish to extremities), [U. S. N. M.].
 Tamos, Tamaulipas, XII, 7, 1909, (F. C. Bishopp), 1 ♀, (brown, caudal tibiae reddish), [U. S. N. M.].
 Pueblo Viejo, Vera Cruz, XII, 8, 1909, (F. C. Bishopp), 1 ♂, 1 ♀, (both brown, caudal tibiae red), [U. S. N. M.].

***Agroecotettix modestus* Bruner.**

1908. *Agroecotettix modestus* Bruner, Biol. Cent.-Amer., Orth., II, p. 312.
 [♀, Lerdo, Durango, Mexico.]
 Monclova, Coahuila, IX, 20, (E. Palmer), 1 ♀, [M. C. Z.].

CONALCÆA Scudder.

1897. *Conalcaea* Scudder, Proc. U. S. Nat. Mus., XX, p. 23.
 1897. *Barytettix* Scudder, *ibid.*, p. 27.

The series now before us, including the single types of all the described species, prove beyond question the above synonymy, the features given by Scudder to distinguish these genera being fanciful or of no generic value.

The genotype, *Conalcaea miguelitana* Scudder, is closely related to *Conalcaea huachucana* Rehn, the latter may eventually prove to be a

¹⁶ In addition to juv. ♂ type of *Phaulotettix compressus* and ♀ type of *Calotettix flavopictus*

geographic race. To these species *C. truncatipennis* Scudder is rather closely related. To *crassus* Scudder, genotype of *Barytettix*, *Conalcaea neomexicana* Scudder is very closely related and may indeed prove to be a geographic race of that species. *Barytettix peninsula* Scudder is a very distinctive insect, best referred at present to the genus *Sinaloa*.

Conalcaea crassa (Scudder).

1897. *Barytettix crassus* Scudder, Proc. U. S. Nat. Mus., XX, p. 28, Pl. II, fig. 10. [♂, San José del Cabo, Lower California, Mexico.]

1897. *Melanoplus nitidus* Scudder, ibid., p. 207. (In part.) [♀, Cape St. Lucas, Lower California, Mexico.]

Scudder admits the questionable association of the sexes for his *M. nitidus*. The specimen from Cape St. Lucas is in every way similar to one of the smaller females from San José del Cabo. A number of topotypic specimens are before us. The entire series of this species is dried alcoholic.

Aidemona azteca (Saussure).

1861. *Platyphyma azteca* Saussure, Rev. et Mag. de Zool., (2), XIII, p. 161. [♂, Temperate Mexico.]

Mazatlan, Sinaloa, 1 ♂, (elongate), [A. M. N. H.].

Tepic, Tepic, 3 juv., [Hebard Cln.].

Guadalajara, Jalisco, (D. L. Crawford), 3 ♂, (elongate), [A. N. S. P.].

Amecameca, Mexico, I, 5, 1899, VII, 11, 1898, 2 ♂, 1 ♀, (1 ♂, ♀ elongate), [Hebard Cln.].

Eslava, Distrito Federal, 1 ♀, [Hebard Cln.].

Cuernavaca, Morelos, VI, (Barrett; Smith), 1 ♂, 2 ♀, [Hebard Cln.].

Matamoros, Morelos, VIII, 11, 1903, (W. L. Tower), 1 ♀, [Tower Cln.].

Rio Cocula, Guerrero, XII, 1898, (O. W. Barrett), 1 ♂, 2 ♀, (elongate), [Hebard Cln.].

Tepetlapa, Guerrero, 3000 feet, X, (H. H. Smith), 2 ♂, 1 ♀, (elongate), [Hebard Cln.].

Dos Arroyos, Guerrero, 1000 feet, IX, (H. H. Smith), 1 ♂, (elongate), [Hebard Cln.].

Mescala, Guerrero, (H. H. Smith), 1 ♀, (elongate), [Hebard Cln.].

Amula, Guerrero, 6000 feet, VIII, (H. H. Smith), 1 ♂, 1 ♀, (elongate), [Hebard Cln.].

Venta de Peregrino, Guerrero, (H. H. Smith), 1 ♀, (elongate), [Hebard Cln.].

Chilpancingo, Guerrero, 4600 feet, VI, (H. H. Smith), 3 ♂, 4 ♀, (elongate), [Hebard Cln.].

Omiteme, Guerrero, 8000 feet, VII, (H. H. Smith), 1 ♂, (short), [Hebard Cln.].

Acapulco, Guerrero, IX, (H. H. Smith), 1 ♂, 1 ♀, (elongate), [Hebard Cln.].

Xucumanatlan, Guerrero, 7000 feet, VII, (H. H. Smith), 5 ♂, (3 elongate), [Hebard Cln.].

Presidio, Vera Cruz, (Forrer), 1 ♀, (elongate), [Hebard Cln.].

Jalapa, Vera Cruz, VI, 1, 1894, 3 ♂, 3 ♀, 1 juv., [Hebard Cln.].

Xico, Vera Cruz, 1 ♂, [Hebard Cln.].

Medellin, Vera Cruz, X, 1895, 4 ♂, 4 ♀, 1 juv., [Hebard Cln.].

Atoyac, Vera Cruz, V, XI and XII, (Smith; Bruner), 2 ♂, 2 ♀, 2 juv., [Hebard Cln.].

Cordoba, Vera Cruz, 1 ♀, [Hebard Cln.].

San Rafael, Vera Cruz, III and IV, (C. H. T. Townsend), 47 ♂, 14 ♀, [Hebard Cln.].

Teapa, Tabasco, III, (H. H. Smith), 8♂, 4♀, [Hebard Cln.].
 Frontera, Tabasco, I, (H. H. Smith), 1♂, [Hebard Cln.].
 Merida, Yucatan, (Gaumer), 2♂, 1♀, [Hebard Cln.].
 Chichen Itza, Yucatan, (E. Thompson), 6♂, 6♀, [Field Mus. Nat. Hist.].
 Valladolid, Yucatan, (Gaumer), 5♂, 2♀, [Hebard Cln.].

Campylacantha similis Scudder.

1897. *Campylacantha similis* Scudder, Proc. U. S. Nat. Mus., XX, p. 52, Pl. IV, fig. 5. [♂, ♀; Lerdo, Durango, Mexico.]

Monclova, Coahuila, XI, 22, 1909, (F. C. Bishopp), 1♂, [U. S. N. M.].

Lerdo, Durango, XI, 1887, (L. Bruner), 1♂,¹⁷ [Hebard Cln.].

The five known forms of this genus all show rather close affinity. Nearest approach to the present insect is shown by *C. lamprotata* Rehn and Hebard. Compared with that insect, *similis* is found to be more robust, with coloration deeper and less brilliant. The males of *Campylacantha*, like those of *Hesperotettix*, differ from the majority of the species of the Melanopli in having the genitalia very much alike in all of the species belonging to the genus.

The male from Monclova has the tegmina reaching the apex of the supra-anal plate; in the Lerdo males the tegmina are shorter, about half as long as the abdomen.

Hesperotettix meridionalis Scudder.

1897. *Hesperotettix meridionalis* Scudder, Proc. U. S. Nat. Mus., XX, p. 59, Pl. IV, fig. 9. [♂, ♀; Guanajuato, Guanajuato, and Sierra Nola, Tamaulipas, Mexico.]

Durango, Durango, (O. W. Barrett), 1♂, [Hebard Cln.].

Guadalajara, Jalisco, VI and VII, 1903, (J. F. McClendon), 1♀, [A. M. N. H.].

This insect is the optimum development of the forms of the Viridis Group. The intensified coloration, particularly of the black markings, combined with its heavier build, gives the species a distinctive facies when compared with its nearest ally, *H. viridis*.

The male from Durango is less brilliantly colored and much smaller than the type, now before us.

The female specimen of *H. pratensis* labelled "Orizaba, Mexico" in the Hebard Collection ex Bruner, recorded both by Scudder and Bruner, is in our opinion probably incorrectly labelled.

We can find no material of *H. speciosus* from northern Chihuahua as recorded by Bruner and do not believe the species occurs in that region.

Melanoplus scitulus Scudder.

1897. *Melanoplus scitulus* Scudder, Proc. U. S. Nat. Mus., XX, p. 249, Pl. XVI, fig. 10. [♂, ♀; Mount Alvarez, San Luis Potosi, Mexico.]

Sierra de San Miguelito, San Luis Potosi, (E. Palmer), 1♀, [Hebard Cln.].

¹⁷ In addition to the typical series in the Hebard Collection.

This specimen agrees fully in all diagnostic features with the type and paratype before us. It is slightly smaller than the female allotype and the coloration is less intense, the marginal fields of the short almost circular tegmina being feebly darkened and only in their proximal portion, the ventral surface of the caudal femora showing very faintly an orange tinge and the caudal tibiae being a much less intense glaucous.

The broad prosternal spine, with cephalic face weakly concave and distal margin broadly convex-truncate, is a striking feature in the present insect. Though different in this respect and in male genitalic features as well from *M. reflexus*, affinity to that species is clearly indicated in the head, pronotum, form of tegmina and general type of coloration.

Melanoplus desultorius insignis new subspecies.

This handsome insect is clearly the optimum development of the species *desultorius* Rehn, showing sufficient differentiation to warrant its recognition as a geographic race. From typical *desultorius* the present insect differs in the larger size, richer greens of the body and red of the antennae, more uniform coloration of the external faces of the caudal femora and particularly in the more ample, conspicuously

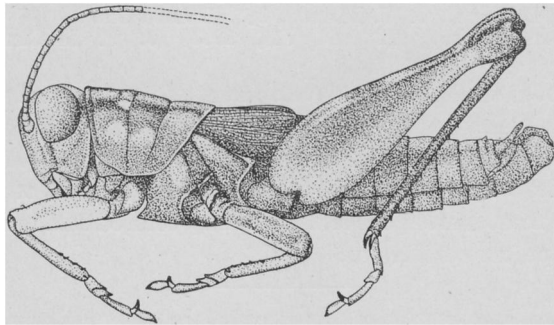


Fig. 4.—*Melanoplus desultorius insignis* new subspecies. Lateral view of male. Type. ($\times 3$.)

overlapping broad-ovate tegmina, which have their caudal margins truncate and showing weak concavity at the apex of the humeral trunk.

Of the species of the Aridus Group, *tristis* Bruner shows the condition developed under the most limiting environment, while *desultorius* represents a more favored development than *aridus* Scudder, to which very close affinity is shown. The male genitalia in all of

these species are of a closely similar type and do not afford the striking differential features usually found in the species of the genus *Melanoplus*.

Type: ♂; Copete Mine, thirty miles east of Carbo, Sonora, Mexico. (F. C. Nicholas.) [American Museum of Natural History.]

Size largest of the forms of the Aridus Group; form moderately robust, distinctly heavier than in typical *desultorius*. Interocular space slightly narrower than first antennal joint. Vertex and frontal costa as in *aridus* and *desultorius*. Eyes distinctly longer than infra-ocular portion of genæ. Pronotum much as in *desultorius*; disk gently arched transversely and longitudinally, the lateral margins rounded; median carina distinct on cephalic half of prozona and on metazona, obsolete on caudal half of prozona; transverse sulci well developed, the first failing by a very brief space to break the median carina, the other two complete, cutting the median line; caudal margin of pronotum rotundato-obtuse-angulate. Prosternal spine moderately elongate, rounding sharply distad to the acute apex. Interspace between mesosternal lobes slightly more than twice as long as least width; metasternal lobes contiguous. Tegmina broad ovate, decidedly overlapping, with caudal margin truncate and showing a broad but weak concavity toward the apex of the humeral trunk. The small, slightly divergent furcula, triangular and but little specialized supra-anal plate and elongate, very slender, moderately incurved. cerci are much as in *desultorius*. The subgenital plate is broader than in that species, much broader than in *aridus*, with distal margin broadly rounded. Other features are found to be as described for *desultorius*.¹⁸

Allotype: ♀; same data as type. [American Museum of Natural History.]

Agrees with male except in the following features. Size much larger, form more robust. Interocular space slightly wider than first antennal joint. Pronotum with median carina percurrent, strongest on metazona, similarly cut by the transverse sulci. Interspace between mesosternal lobes with width contained in length about one and one-half times, that between metasternal lobes very narrow.

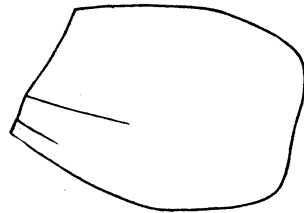


Fig. 5.—*Melanoplus desultorius insignis* new subspecies. Outline of female tegmen. *Allotype.* (× 3.)

¹⁸ Ey Rehn, Proc. Acad. Nat. Sci. Phila., 1907, p. 51, (1907).

Tegmina proportionately even broader than in male, with truncation of distal margin more noticeable. Ovipositor moderately stout, distal tooth of dorsal valves weakly curved.

Measurements (in millimeters).

	Length of body.	Length of pronotum.	Length of tegmen.	Width of tegmen.	Length of caudal femur.	Width of caudal femur.
♂. <i>Type</i>	22.7	5.7	4.6	3.	13.65	3.65
♀. <i>Allotype</i>	31.8	7.	6.2	4.	18.4	4.6

Coloration. The color pattern is shown by the figure. General coloration dark zinc green and antimony yellow. Head with vertex antimony yellow with a medio-longitudinal band of bottle green, eyes kaiser brown, antennæ brilliant coral red, other portions of head yellowish, heavily obscured with dull greenish and with a postocular band of dark zinc green. Pronotum with pale markings antimony yellow, darker markings dark zinc green, those of the dorsum with a brownish suffusion and the darkest areas of the lateral lobes greenish black. In the female the dorsal band is solidly of this color. Tegmina olive brown, in the female shading proximad to clove brown. Abdomen and underparts yellowish. Cephalic and median limbs yellowish washed with green. Caudal femora with dorsal surface bright antimony yellow, with two broad bands of dark zinc green; internal surface antimony yellow; external surface dark zinc green shading into antimony yellow ventrad, leaving the ventral portion rather broadly this color, broadest proximad; genicular areas black with lobes antimony yellow washed with green. Caudal tibiæ gobelin blue; spines black except at their immediate bases.

The pair is unique.

Melanoplus discolor (Scudder).

1897. *Pezotettix discolor* Scudder, Proc. Bost. Soc. Nat. Hist., XX, p. 81.

[♂, ♀; Dallas, Texas.]

1897. *Melanoplus discolor* Scudder, Proc. U. S. Nat. Mus., XX, p. 149,

Pl. X, fig. 7. (Same series.)

1897. *Melanoplus inornatus* Scudder, *ibid.*, p. 254, Pl. XVII, fig. 3. [♂, ♀; unknown locality; Monclova (nec Montelovez), Coahuila, Mexico.]

As the described male of *M. inornatus* had been destroyed, a female in the Museum of Comparative Zoölogy from Monclova has been selected as type. The above synonymy is evident when comparison of this specimen is made with cotypes of *discolor* and a considerable series of that species now at hand.

The species shows very unusual variation in females having the mesosternal space varying individually from subquadrate to dis-

tinely longer than broad. Variation in the male cerci is also found, but no approach is shown in the series before us to Scudder's figure for *inornatus*, showing a mesially constricted condition. The male without data, described as *inornatus*, may have represented a different species from the female. As the single type has been selected, a female, this would have no effect on the synonymy indicated above.

***elanoplus thomasi* Scudder.**

1897. *Melanoplus thomasi* Scudder, Proc. U. S. Nat. Mus., XX, p. 368, Pl. XXV, fig. 1. [♂, Lerdo, Durango, Mexico.]

Durango, Durango, (O. W. Barrett), 1♂, [Hebard Cln.]; XI, 27, 1909, (F. C. Bishopp), 2♂, 1♀, [U. S. N. M.].
Escuinapa, Sinaloa, (J. H. Batty), 1♀, [A. M. N. H.].

The pale lateral pronotal lines are wider in the Escuinapa example than in the others of this large and handsome insect.

***Melanoplus differentialis* (Thomas).**

1871. *Caloptenus differentialis* Thomas, Proc. Acad. Nat. Sci. Phila., 1871, p. 149. [♂, ♀; Jackson County, Illinois.]

Guanajuato, Guanajuato, (A. Dugès), 1♂, [U. S. N. M.]; XII, 11, 1898, 1♀, [Hebard Cln.].

Vera Cruz, Vera Cruz, (T. Heyde), 2♂, [Hebard Cln.].

Medellin, Vera Cruz, IX, 1895, 2♂, 5♀, [Hebard Cln.].

San Rafael, Vera Cruz, (C. H. T. Townsend), 2♂, [Hebard Cln.].

***Melanoplus corpulentus* Scudder.**

1897. *Melanoplus corpulentus* Scudder, Proc. U. S. Nat. Mus., XX, p. 313, Pl. XX, fig. 10. [♂, ♀; Tlalpam, Distrito Federal; San Luis Potosi and Sierra de San Miguelito, San Luis Potosi; Zacatecas, Zacatecas, and Sonora, Mexico: Silver City, New Mexico.]

Casas Grandes, Chihuahua, IX, 1902, (W. E. Hughes), 1♀, [A. N. S. P.].

Eslava, Distrito Federal, IX, 1898, (O. W. Barrett), 1♂, [Hebard Cln.].

Tacubaya, Distrito Federal, IX, 1♀, [A. N. S. P.].

Cuernavaca, Morelos, I, 4, 1899 and II, 1898, (O. W. Barrett), 1♂, 1♀ [Hebard Cln.].

***Melanoplus regalis* (Dodge).**

1876. *Caloptenus regalis* Dodge, Can. Ent., VIII, p. 11. [Glencoe, Nebraska.]

1902. *Æoloplus crassus* Scudder and Cockerell, Proc. Davenport Acad. Nat. Sci., IX, p. 42. (In part.) [♀, San Luis Potosi, Mexico.]

Casas Grandes, Chihuahua, IX, 1902, (W. E. Hughes), 1♂, [A. N. S. P.].

San Luis Potosi, X, (from E. Palmer; G. Banoeta), 1♀, *cotype* of *Æoloplus crassus* Scudder and Cockerell, [M. C. Z.].

Guadalajara, Jalisco, IX, 18, 1903, (J. F. McClendon), 1♂, [A. N. S. P.].

The present insect has not been previously recorded from Mexico as *regalis*. Marked variation is shown by the material at hand. The male from Guadalajara is very small and brilliantly colored, with bright greens and yellows on head, pronotum and dorsal surfaces of caudal femora and brilliant nopal red on the ventral and internal faces of the caudal femora, while the caudal tibiæ are deep glaucous. The other specimens are larger, much less brilliantly colored and show only traces of greenish on head and pronotum.

This insect is extremely close to *M. picturatus* Bruner, the latter apparently differing only in the more robust form, decidedly larger average size and constant brilliant coloration, in which the prozona is normally conspicuously washed with pink, as are frequently the outer surfaces of the caudal femora.

***Melanoplus femur-rubrum femur-rubrum* DeGeer.**

1773. *Acrydium femur-rubrum* DeGeer, Mém. l'Hist. Ins., III, p. 498, Pl. XLII, fig. 5. [[♀], Pennsylvania.]

Piedras Negras, Coahuila, 1♀, [U. S. N. M.].

Ciudad, Durango, 8100 feet, (Forrer), 2♀, [Hebard Cln.].

Aguascalientes, Aguascalientes, XI, 1887, (L. Bruner), 1♀, [Hebard Cln.].

Guanajuato, Guanajuato, (A. Dugès), 1♂, [U. S. N. M.].

Guadalajara, Jalisco, VIII, 3, (J. F. McClendon), 1♀; (D. L. Crawford), 1♀, [both A. N. S. P.].

Omiteme, Guerrero, 8000 feet, VII, (H. H. Smith), 1♀, [Hebard Cln.].

Merida, Yucatan, (Gaumer), 3♀, [Hebard Cln.].

Chichen Itza, Yucatan, (E. Thompson), 1♂, [Field Mus. Nat. Hist.].

It is of interest to note that though the species over the greater portion of its distribution has the caudal tibiae red, all of the present series, excepting those from Ciudad, Guanajuato and Omiteme, have the caudal tibiae glaucous. Decided size and color, but no structural, variation is shown by this material.

***Melanoplus lakinus* (Scudder).**

1879. *Pezotettix lakinus* Scudder, Proc. Bost. Soc. Nat. Hist., XX, p. 79. [♂, ♀; Lakin and Pueblo, Colorado.]

1897. *Melanoplus marculentus* Scudder, Proc. U. S. Nat. Mus., XX, p. 139, Pl. X, fig. 1. [♂, ♀; Monclova (nec Montelovez), Coahuila; Sierra Nola, Tamaulipas; Sierra de San Miguelito, San Luis Potosi and Bledos, San Luis Potosi; Zacatecas, and Aguas Calientes—all Mexico.]

1897. *Melanoplus lakinus* Scudder, ibid., p. 141, Pl. X, fig. 2. [Nebraska, Colorado, Kansas and New Mexico records.]

1897. *Melanoplus sonora* Scudder, ibid., p. 143, Pl. X, fig. 3. [♂, ♀, Sonora, Mexico.]

The synonymy of *marculentus* is clearly proven by comparison of the different large series before us with the single type of *lakinus*¹⁹ and of *marculentus*.²⁰ An optimum condition, very robust in structure, is the basis for this name; the mesosternal differences noted by Scudder are wholly due to slight individual variation.

The typical series of *sonora* is lost; the material clearly representing dried alcoholic specimens of *lakinus*, in which the caudal tibiae have lost their glaucous coloration, becoming yellowish brown.²¹ Material similarly badly preserved is before us.

¹⁹ Here selected: ♂; Lakin, Kansas, September, 1; S. H. Scudder; Museum of Comparative Zoölogy.

²⁰ Selected by Rehn and Hebard, Proc. Acad. Nat. Sci. Phila., 1912, p. 78, (1912).

²¹ See Rehn, Proc. Acad. Nat. Sci. Phila., 1907, p. 51, (1907). Scudder, in his Revision, has frequently erred in studying such material, the effect of alcohol upon tissue and coloration being apparently ignored.

- Copete Mines, 30 miles east of Carbo, Sonora, (F. C. Nicholas), 1 ♂, [A. M. N. H.].
 Escuinapa, Sinaloa, (J. H. Batty), 1 ♀, [A. M. N. H.].
 San José del Cabo, Lower California, 5 ♀, [California Acad. Sci.].
 Casas Grande, Chihuahua, IX, 1902, (W. E. Hughes), 1 ♀, [A. N. S. P.].
 Colonia Garcia, Chihuahua, (C. H. T. Townsend), 1 ♂, 1 ♀,²² (both macropterous), [Hebard Cln.].
 Monclova, Coahuila, (E. Palmer), 3 ♀, (1 macropterous), [M. C. Z.].
 Torreon, Coahuila, X, 30, 1909, (J. Friesser), 1 ♂, 1 ♀, (♀ macropterous), [Field Mus. Nat. Hist.].
 Tlahualilo, Durango, XII, 6, 1905, (A. W. Morrill), 1 ♀, [U. S. N. M.].
 Lerdo, Durango, XI, 1887, (L. Bruner), 2 ♀, [Hebard Cln.].
 Durango, Durango, XI, 27, 1909, (F. C. Bishopp), 5 ♂, 8 ♀, [U. S. N. M.].
 Camacho, Zacatecas, XI, 1887, (L. Bruner), 1 ♀, [A. N. S. P.].
 Zacatecas, Zacatecas, XI, 1887, (L. Bruner), 5 ♂, 8 ♀, including paratypes of *M. marculentus*,²³ [Hebard Cln. and A. N. S. P.].
 Aguascalientes, Aguascalientes, XII, 1, 1909, (F. C. Bishopp), 1 ♂, 6 ♀, (1 ♀ macropterous), [U. S. N. M.]; XI, 1887, (L. Bruner), 4 ♂, 2 ♀, [Hebard Cln. and A. N. S. P.]; XII, 9, 1898, 4 ♂, 5 ♀, (2 ♂, 1 ♀ macropterous), [Hebard Cln. and A. N. S. P.].
 Guanajuato, Guanajuato, XII, 11, 1898, 1 ♀, [Hebard Cln.].
 Ocotlan, Jalisco, 5000 feet, VIII, 29 to IX, 1, 1906, (P. P. Calvert), 1 ♂, [A. N. S. P.].

Specimens from Monclova, Coahuila, and a series including the type from Sierra Nola, Tamaulipas, show by far the optimum development, being exceptionally large and robust. Decided size variation, irrespective of geographic distribution, is found to occur, this particularly illustrated by the series from Aguascalientes. Very great color variation is usual; rare specimens are heavily washed with pink.

Melanoplus mexicanus mexicanus (Saussure).

1861. *Pezotettix mexicana* Saussure, Rev. et Mag. de Zool., (2), XIII, p. 160.
 [♂, ♀; Temperate Mexico.]
 (*Melanoplus atlanis* of authors.)

Careful study of the literature and the extensive series at hand gives conclusive evidence that the widespread and abundant species, known universally as *M. atlanis*, must be called *mexicanus*, *atlanis* having been described in 1875. The name *atlanis* accordingly is alone retained for the race of *mexicanus* widely distributed throughout the eastern United States and vicinity. The species clearly divides into several geographic races, which will be fully discussed in a forthcoming study of the North American *Melanopli* found North of Mexico.

- Durango, Durango, XI, 27, 1909, (F. C. Bishopp), 1 ♂, 1 ♀, [U. S. N. M.].
 Aguascalientes, Aguascalientes, XI, 1887, (L. Bruner), 1 ♂, 1 ♀,²⁴ [Hebard Cln.].

²² Incorrectly recorded by Bruner as *M. cuneatus*, in 1908.

²³ In part incorrectly recorded by Scudder as *M. flabellifer* in 1897 and by Bruner as *flabellifer* in 1908.

²⁴ Recorded by Scudder as *M. atlanis* in 1897.

Guadalajara, Jalisco, (D. L. Crawford), 2♂, 2♀; VIII, 18 to IX, 14, 1903, (J. F. McClendon), 6♂, 2♀,²⁵ [all A. N. S. P.].
 Querétaro, Querétaro, XI, 1887, (L. Bruner), 1♂, [Hebard Cln.].
 Mexico City, Distrito Federal, I, 6, 1892 and XI, 1887, (L. Bruner), 2♂, 5♀,²³ [Hebard Cln. and A. N. S. P.].
 Tacubaya, Distrito Federal, VIII and IX, (O. W. Barrett), 2♂,²⁷ 3♀, [Hebard Cln. and A. N. S. P.].
 Tlalpam, Distrito Federal, XI, 1887, (L. Bruner), 1♂, [Hebard Cln.].
 Cuernavaca, Morelos, VI, (O. W. Barrett), 1♀,²³ [A. N. S. P.].
 Atoyac, Vera Cruz, XII, (L. Bruner), 1♂, [Hebard Cln.].
 Patzcuaro, Michoacan, IV, 7, 1899, (S. N. Rhoads), 1♂,²³ [A. N. S. P.].
 Amula, Guerrero, 6000 feet, VIII, (H. H. Smith), 4♂, 5♀, [Hebard Cln.].
 Xucumanatlan, Guerrero, 7000 feet, VII, (H. H. Smith), 2♂, 2♀, [Hebard Cln.].
 Omilteme, Guerrero, 8000 feet, VII, (H. H. Smith), 5♂, 3♀, [Hebard Cln.].

In the present series, as given by Saussure for his typical material, individuals show both red and glaucous caudal tibiae, the glaucous type being much more frequently encountered in Mexico than in the United States. In the present series the following have glaucous caudal tibiae: 1♂, 1♀, Durango; 1♂, 1♀, Aguascalientes; 4♂, 2♀, Guadalajara; 4♂, 3♀, Amula; 2♂,³⁰ 2♀, Xucumanatlan, and 3♂, Omilteme. The ventral surfaces of the caudal femora are in all very red, as described by Saussure.

Melanoplus palmeri Scudder.

1897. *Melanoplus palmeri* Scudder, Proc. U. S. Nat. Mus., XX, p. 230, Pl. XV, fig. 7. [♂, ♀; Fort Wingate, New Mexico, and Fort Whipple, Arizona.]
 San Lorenzo, Chihuahua, (E. Palmer), 1♀,³¹ (dried alcoholic), [U. S. N. M.].
 Casas Grandes, Chihuahua, IX, 1902, (W. E. Hughes), 2♂, 1♀, 2 juv., (dried alcoholic), [A. N. S. P.].
 Colonia Garcia, Chihuahua, (C. H. T. Townsend), 1♀, [Hebard Cln.].
 Durango, Durango, (E. Palmer), 1♂, [M. C. Z.]; XI, 27, 1909, (F. C. Bishopp), 1♂, [U. S. N. M.].
 Escuinapa, Sinaloa, (J. H. Batty), 1♂, [A. M. N. H.].
 Zacatecas, Zacatecas, XI, 1887, (L. Bruner), 1♀,³² [Hebard Cln.].

Melanoplus elongatus Scudder.

1897. *Melanoplus elongatus* Scudder, Proc. U. S. Nat. Mus., XX, p. 160, Pl. XI, fig. 5. [♂, ♀; Finney County, Kansas; Las Cruces, New Mexico; Lerdo, Durango, Mexico; Guanajuato, *Mexico and Bledos, San Luis Potosi, Mexico.]
 Sonora, 1♂, [A. M. N. H.].
 Monclova, Coahuila, XI, 22, 1909, (F. C. Bishopp), 1♀, [U. S. N. M.].
 Tampico, Tamaulipas, XII, 1906, (C. A. Hart), 1♂,³³ [Hebard Cln.].

The males have the ventral surfaces of the caudal femora english red or mars orange.

²⁵ 5♂, 2♀ recorded incorrectly by Rehn as *M. spretis* in 1904.

²⁶ In part recorded by Scudder as *M. allanisi* in 1897.

²⁷ 1♂ incorrectly recorded by Rehn as *M. spretis* in 1900.

²⁸ Incorrectly recorded by Rehn as *M. arizonæ* in 1901.

²⁹ Recorded by Rehn as *M. allanisi* in 1902.

³⁰ Two have the caudal tibiae very pale.

³¹ Incorrectly recorded by Scudder as *M. spretus* in 1897.

³² Incorrectly recorded by Scudder as *M. flabellifer* in 1897.

³³ Incorrectly recorded by Bruner as *M. flavidus* in 1908.

Melanoplus complanatus Scudder.

1897. *Melanoplus complanatus* Scudder, Proc. U. S. Nat. Mus., XX, p. 298, Pl. XIX, fig. 10. [Cape St. Lucas, Lower California; Sonora, Mexico.]

San José del Cabo, Lower California, 13♂, 14♀, 2 juv., (dried Alcoholic), [Hebard Cln. and California Acad. Sci.].

Melanoplus pictus brownii Caudell.

1902. *Melanoplus brownii* Caudell, Can. Ent., XXXIV, p. 169. [♂, ♀, Yuma, Arizona.]

Study of the single types of *M. pictus* Scudder and *M. brownii* Caudell and large series of the latter condition before us, offers satisfactory evidence that *brownii* must be considered a geographic race of *pictus*. Full comparisons will be made in a study of North American Melanopli found North of Mexico.

Hermosillo, Sonora, IV, 1897, (A. Koebele), 1♂, [Hebard Cln.].

Melanoplus cinereus cyanipes Scudder.

1897. *Melanoplus cyanipes* Scudder, Proc. U. S. Nat. Mus., XX, p. 295, Pl. XIX, fig. 8. [♂, ♀; Los Angeles, Pasadena and San Diego, California.]

Careful consideration of the types of *cinereus* Scudder and the single type of *cyanipes* Scudder and large series of these and other closely related conditions, shows conclusively that *cyanipes* represents a geographic race of *cinereus*, which species develops still other geographic races over its wide distribution in the western United States. These will be treated in full in a forthcoming paper on the Melanopli of North America found North of Mexico.

San Quentin, Lower California, V, 1889, (C. D. Haines), 1♂, [Hebard Cln.].

Phætalotes nebrascensis (Thomas).

1872. *P[ezotettix] nebrascensis* Thomas, Prelim. Rept. U. S. Geol. Surv. Montana and Terr., V, p. 455. [♀, Nebraska.]

Colonia Garcia, Chihuahua, (C. H. T. Townsend), 2♂, (macropterous), [Hebard Cln.].

Durango, Durango, (E. Palmer), 1♂, [M. C. Z.].

Guanajuato, Guanajuato, (A. Dugès), 1♂, (macropterous), [U. S. N. M.].

Cordoba, Vera Cruz, IX, 28, 1♂, 1♀, [Cornell Univ. Cln.].

We find that four Mexican genera, *Philocleon*, *Perixerus*, *Poecilotettix* and *Dactylotum*,³⁴ show a distinct divergence from the true Melanopli, but insufficiency of material prevents us from determining whether these should be referred to a separate group, the Dactyloti. The forms all have a broad, blunt vertex, showing some depression, this often transverse, between the eyes; the prozona inflated, rounding

³⁴ There is little doubt but that *Poepedetes* Saussure is a synonym of *Dactylotum* Charpentier.

broadly laterad and in the majority of species with transverse sulci deep, while the number of outer spines of the caudal tibiae, though individually variable, average in some of the species less than eight. All of the forms are variously brilliantly colored, but have a distinct general appearance of consanguinity.³⁵ Until much additional material is secured we feel that notes on the Mexican material of these genera would not be sufficiently complete to warrant publication.

The species of Melanopli which have been correctly recorded from Mexico.

(Material of the names marked with an asterisk is in the Philadelphia collections, two asterisks indicating that the type is in these collections and a dagger that the type has been at hand for examination during the preparation of the present paper.)

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|---|--|
| 1. <i>Netrosoma fusiforme</i> * | 20. <i>Conalcaea miguelitana</i> |
| 2. <i>Netrosoma nigropleura</i> ** | Scudder* |
| 3. <i>Dichroplus notatus</i> Bruner* | 21. <i>Conalcaea truncatipennis</i> |
| 4. <i>Pedies virescens</i> Saussure | Scudder† |
| 5. <i>Pedies mexicanus</i> (Brunner)* | 22. <i>Conalcaea crassa</i> (Scudder)** |
| 6. <i>Pedies variabilis</i> (Scudder)** | 23. <i>Aidemona azteca</i> (Saussure)* |
| 7. <i>Cephalotettix pilosus</i> (Stål)* | 24. <i>Paraidemona mimica</i> |
| 8. <i>Phædotettix gracilis</i> | Scudder* |
| (Brunner)** | 25. <i>Campylacantha similis</i> |
| 9. <i>Phædotettix bistrigata</i> | Scudder** |
| (Scudder)† | 26. <i>Hesperotettix meridionalis</i> |
| 10. <i>Phædotettix angustipennis</i> | Scudder*† |
| Scudder*† | 27. <i>Melanoplus scitulus</i> |
| 11. <i>Phædotettix valga</i> | Scudder*† |
| (Scudder)*† | 28. <i>Melanoplus meridionalis</i> ³⁶ |
| 12. <i>Phædotettix litus</i> Hebard** | Scudder*† |
| 13. <i>Phædotettix palmeri</i> | 29. <i>Melanoplus cancri</i> Scudder** |
| (Scudder)*† | 30. <i>Melanoplus desultorius insignis</i> Hebard* |
| 14. <i>Sinaloa behrensii</i> Scudder† | 31. <i>Melanoplus discolor</i> |
| 15. <i>Sinaloa nitida</i> (Scudder)** | (Scudder)*† |
| 16. <i>Sinaloa peninsulæ</i> | 32. <i>Melanoplus glaucipes</i> |
| (Scudder)** | (Scudder)* |
| 17. <i>Phaulotettix compressus</i> | 33. <i>Melanoplus bivittatus</i> (Say)* |
| Scudder*† | 34. <i>Melanoplus thomasi</i> |
| 18. <i>Agroecotettix modestus</i> | Scudder** |
| Bruner** | 35. <i>Melanoplus differentialis</i> |
| 19. <i>Dasyiscirtus olivaceous</i> | (Thomas)* |
| Bruner** | |

³⁵ The genus *Philocleon* stands off by itself and shows this feature least.

³⁶ We have been unable to examine the type of *M. reflexus* Scudder, of which *meridionalis* may possibly be a synonym.

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|--|---|
| 36. <i>Melanoplus sumichrasti</i>
(Saussure)* | 43. <i>Melanoplus palmeri</i>
Scudder* |
| 37. <i>Melanoplus corpulentus</i>
Scudder* | 44. <i>Melanoplus elongatus</i>
Scudder* |
| 38. <i>Melanoplus regalis</i> (Dodge)* | 45. <i>Melanoplus complanatipes</i>
Scudder* |
| 39. <i>Melanoplus picturatus</i>
Bruner** | 46. <i>Melanoplus pictus brownii</i>
Caudell* |
| 40. <i>Melanoplus femur-rubrum</i>
<i>femur-rubrum</i> (de Geer)* | 47. <i>Melanoplus cinereus cyanipes</i>
Scudder* |
| 41. <i>Melanoplus lakinus</i>
(Scudder)*† | 48. <i>Phætaliotes nebrascensis</i>
(Thomas)* |
| 42. <i>Melanoplus mexicanus mexi-</i>
<i>canus</i> (Saussure)* | 49. <i>Ædaleonotus jucundus</i>
(Scudder)* |

We are unable to locate *Melanoplus selectus* Walker, described from Mexico.

Bruner has incorrectly quoted *Pezotettix varicolor* Stål, since referred to *Paradichroplus* then to *Chlorus*, as having been recorded from Mexico.

Kirby has incorrectly quoted *Conalcaea neomexicana* as having been recorded from Mexico.

Uhler's record of *Hesperotettix viridis* from Mexico is probably referable to *H. meridionalis*.

The other incorrect determinations and the synonyms for the Mexican *Melanopli* have already been discussed in the present paper.